

ment with a length five times its diameter and apically a spindle-shaped, fingerlike process. Palpi; the first segment irregularly ovate, the second with a length five times its diameter, the third as long as the second, the fourth one-fourth longer than the third. Eyes holoptic. Mesonotum reddish brown, the submedian lines yellowish. Scutellum and postscutellum yellowish brown. Abdomen rather thickly haired, mostly dark brown, the incisures dorsally lighter, the venter darker, the ovipositor pale yellowish. Wings strongly marked with dark brown and white patches as follows; on the basal third of the third vein an irregularly, quadrangular, whitish area slightly restricted distally on the third vein and divided by it; at the distal fourth, between the third vein and costa, there are two irregular, transverse, whitish bands, the outer one nearly broken and almost forming a V; caudad of the third vein, near its distal fourth and nearly opposite the irregular, transverse bands mentioned above, are two irregular, angulate, whitish spots close to the third vein; along the fifth vein, near the middle and at its distal fourth, are two ill-defined whitish, angulate areas extending on both sides of the vein; in the anal area there is a lunate, whitish area extending from the fifth vein along its branch to the posterior margin, and basally thereof, a pyriform, whitish area; halteres whitish transparent. Coxæ reddish brown, femora dark straw; tibiæ and tarsi mostly pale straw, the distal tarsal segments darker; claws moderately stout, strongly curved, simple, the pulvilli rudimentary. Ovipositor short, the terminal lobes sparsely setose and narrowly oval.

Type: Cecid. 1597.

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## EARLY STATES OF STAPHYLINIDÆ.

### I. *XANTHOLINUS CEPHALUS* SAY.

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On July 24, 1914, while collecting larvæ under the bark of decaying *Pinus rigida* Mill., at Springfield, Mass., a number of Staphylinid larvæ, of apparently the same species, were taken. These larvæ were reared and the beetles identified as *Xantholinus cephalus* Say. Since that time I have taken the same species under the bark of *Castanea dentata* (Marsh) Borkh., showing that the species is not confined to *Pinus*. Hamilton (Canadian Ent., 1891, Vol. 23, p. 60) notes the species as occurring under bark at Allegheny, Pa., and also under rubbish on the coast at Atlantic City, N. J.

The rearing was done in plaster-of-Paris nests, modified slightly from those designed and used by Janet ('93) for rearing ants, and similar to those used by Dimmock ('04) in his work on the Carabidæ. Very little difficulty was experienced, the larvæ feeding

readily on small maggots, such as are found under decaying bark. Two larvæ were preserved in alcohol, as were a few pupæ. The rest were allowed to pupate and emerge. All larval and pupal exuviae were preserved. It is from this material that I have made the observations recorded in this paper.

At this time, I wish to extend my sincere thanks to Dr. George Dimmock of Springfield for valuable aid and suggestions, to the staff of the Osborn Zoölogical Laboratory, Yale University, for the use of laboratory instruments and facilities, and to Mr. Herbert S. Barber of the National Museum, for identification of the species.

#### Larva of *Xantholinus cephalus*

*Form* depressed slender fusiform, with ventral side of body straight, fitted for locomotion on flat surfaces, eight and one-half times longer than wide, head and thoracic segments nearly equal in width, greatest width at fourth abdominal segment. Length of mature larva, 9.5 mm. *Head* quadrate, depressed, sides nearly parallel. Neck five-eighths width of head, with a V shaped indentation on ventral posterior margin. *Epistoma* pentagonal, reaching posteriorly about one-third distance from anterior margin of clypeus to posterior margin of head, with V shaped indentation in lateral margins, with a large seta slightly posterior to apex of indentation. Other setæ symmetrically arranged. *Frontal angles* not prominent. *Clypeus* not separate from epistoma, dentate on anterior margin, one tooth at middle and four teeth on either side, the first tooth from the middle being the largest. Numerous large setæ symmetrically arranged. *Hypostoma* somewhat pentagonal, about one-half length of head. Four setæ arranged along lateral margins. Horn on each anterior angle, directed forward, one seta at base of each horn. *Ocelli* minute, probably four, confluent. Not apparent in shed larval skins. *Antennæ* four jointed, slightly longer than mandibles; first joint nearly hemispherical, nearly as wide as long, no setæ. Second joint clavate cylindrical, one-fifth as wide as long and four times as long as the first, with a single seta situated near the base on the external dorsal side. Third joint fusiform four times longer than wide and four-fifths as long as the second, outer ventral angle obliquely truncated and bearing on the truncation a prominent acorn shaped appendix, five setæ situated on the upper half of the third joint. Fourth joint slender, somewhat clavate, bearing three large and four small setæ on its tip. Antennal formula: .05 .21 .17 (.03) .10. *Mandibles* three times longer than wide, toothless, slender acuminate falciform, three setæ on outer margin, a small one near the base, a large one the same distance in advance, and a third, small, slightly less than half way between base and apex. *Maxillæ* equal in length to antennæ. Maxillary stipes slightly less than half length of mandible, subcylindrical, five times longer than wide, apex obliquely truncated on inside, with four setæ on outside and two on inside along margins. Outer lobe seven-ninths as long as first joint of palp, a single slender, conical joint four times longer than wide, with a single stout seta at apex. Inner lobe lacking. Palpigerous stipes stout, cylindrical, two-thirds as wide as long, unadorned. Maxillary palp

two-thirds as long as maxillary stipes, first joint twice the length of the palpigerous stipes and nearly equal in width, with two setæ, one on interior margin, one-third of distance from base to apex and the other on the exterior angle of the apex. Second joint two-thirds length of first and two-thirds width, subcylindrical, unadorned. Third joint one-half length and width of second, cylindrical, slightly acuminate, unadorned. Formula of maxilla: Stipes, .31 Palp, .21 Lobe, .07. *Mentum* exerted. Stipites of labial palpi concrete, taken together somewhat depressed clavate, with a shallow indentation on either side of apex, densely clothed with minute setæ. Ligula present, minute, conical. Labial palpi two jointed with terminal appendix. First joint cylindrical, slightly longer than palpigerous stipes, three times longer than wide, unadorned. Second joint cylindrical, slightly fusiform, same length as first, slightly narrower. Terminal appendix tapering cylindrical, two-thirds as long as second joint, unadorned. Formula of labial palp: .06 .06 (.04). *Thorax* composed of three well defined segments. First segment rectangular, nine-tenths as wide as long, tapering posteriorly, slightly chitinous. Numerous setæ arranged as follows: seven large, on or near lateral margins (one at middle, four at anterior angle and two midway between middle and posterior angle). Two on anterior margin, each half way between angle and midline. Two similarly placed near posterior margin. Second segment rectangular, equal in width to first and four-fifths as long. Not chitinous. Numerous setæ as follows: Five large, on or near lateral margins, somewhat as in first. One seta near each anterior angle. Other minute setæ present. Third segment: same size as second. One large seta on margin near anterior angle. Other minute setæ. *Abdomen* composed of nine segments, the last bearing a pair of cerci and anal tube. Segments progress in width to the fourth, then taper to the end. Numerous setæ on each segment. *Anal cerci* two jointed, arising from dorsal, posterior margin of ninth segment. First joint cylindrical, five times as long as broad, with six setæ arranged as in Plate II, Figure 2. Second joint cylindrical, same proportion as first, with two setæ at tip. A minute terminal appendix present. *Legs*. First pair, Femur stout with a few setæ on margins. Tibia cylindrical, same length as femur, armed with a row of seven stout spines on posterior margin. Tarsus cylindrical, armed with stout spines, eight on anterior and seven on posterior margin. Terminates in a single claw. Second and third pairs, similar to first. Comparative lengths of legs:

	1st.	2d.	3d.
Femur.....	25	25	27
Tibia.....	24	26	28
Tarsus.....	21	20	22

#### Pupa of *Xantholinus cephalus*.

*Form* coarctate, total length three and one-third times greatest width, greatest width one-third length of pupa from anterior end. Length, 4.8 mm. *Color* chitin colored throughout. *Antennæ* directed posteriorly from insertion and in living pupa, lie concealed under sides of head. *Elytra* and wings small, wrapped closely around body so that they are hardly visible from dorsal surface. *Stigmata* of thorax concealed, those of abdomen visible from dorsal side, peritremes protruded, slightly

darker than rest of body. *Setæ* absent. *Dorsal view*: Head and anterior margin of prothorax hidden. Knees of first pair of legs visible at sides of prothorax, near posterior margin. Knees of third pair of legs project at sides of second abdominal segment. *Prothorax* rounded triangular, joined to mesothorax by a straight line. *Mesothorax* convex, suture separating it from elytra not definable. Anterior margin straight, posterior margin with a median protrusion extending one-third into the metathorax. *Metathorax* slightly convex, same width as mesothorax, anterior margin following line of joint with mesothorax, posterior margin straight. Formula expressing ratio of lengths of thoracic segments: 37 18 23. *Abdomen*: First segment slightly longer and wider than metathorax, second segment but half the length of first and of equal width. Segments increase in width to the fifth from whence they taper to the end. Stigmata near the lateral margins. *Cerci* inconspicuous. *Ventral view*: Head semicircular in front surrounded in anterior outline by prothorax and, from vertex to tip of mandibles, slightly more than one-third total length of pupa. Eyes not conspicuous until coloration previous to emergence sets in, when they are seen to be just above base of mandibles. Tip of antenna reaches slightly beyond eye. Mandibles slightly more than one-fourth of length of head, closed but do not overlap. Labrum extends down as far as tip and covers interior halves of mandibles. Labrum notched at tip. Maxillary palps extend slightly below mandibles, the part in view roughly triangular. Labial palps hidden. *Legs*: First pair. Femora hidden beneath head with exception of tips, which are visible at the sides of the head where the antennæ are inserted. Tibiæ directed posteriorly from this point and reach to the eyes. Tarsi are nearly parallel and reach posteriorly nearly to the tips of the mandibles. Second pair. Femora of second pair of legs completely hidden by head. Tibiæ partially hidden by tarsi of first pair, but do appear outside first legs near the eyes. Tarsi parallel and extend below the mandibles a distance equal to that across the tips of the maxillary palps. Third pair. Femora are visible and extend in nearly a straight line at right angles to the body. Tibiæ extend inward and posteriorly and end at the posterior margin of the third abdominal segment. Tarsi are parallel and extend almost to the middle of the fifth segment.

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## DESCRIPTION OF PLATES.

## XIII

Fig. 1. Head of larva, dorsal view. X 55.

Fig. 2. Head of larva, ventral view. X 55.

## XIV

Fig. 1. Detail of antenna, larva, showing appendix. X 235.

Fig. 2. Anal cerci of larva, dorsal view. X 55.

Fig. 3. Anal cerci of pupa, ventral view. X 55.

Fig. 4. Pupa, dorsal view. X 20.

Fig. 5. Pupa, ventral view. X 20.

SOME MYRMECOPHILOUS INSECTS FROM HAYTI.<sup>1</sup>

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The insects here noted were collected in Hayti during the winter of 1912-13. Few myrmecophilous insects have been recorded from the West Indies, though no doubt many occur there as the ant fauna is varied and abundant and contains many ancient types. Of these *Aphenogaster relictæ* Wheeler & Mann is the predominant Myrmicine ant on the island, and this species was found to harbor several interesting inquilines.

In addition to the species recorded in these notes several others of possibly myrmecophilous habits were taken. I hope to list these after further study.

Mr. A. B. Wolcott, of the Field Museum at Chicago, has very kindly drawn the accompanying figures.

The types of the new species have been deposited in the Museum of Comparative Zoölogy at Cambridge.

## ORTHOPTERA.

## FAMILY GRYLLIDÆ.

*Myrmecophila prenolepidis* Wasmann.

A single specimen was taken from a colony of *Prenolepis longicornis* Latr. at Manneville near the shores of Lake Assuei. Another

<sup>1</sup> Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 101.